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EXAMINER
TRUONG, CAMQUY

ART UNIT	PAPER NUMBER
2195	

DATE MAILED: 04/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

> A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
> THE MAILING DATE OF THIS COMMUNICATION.
> - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
>   after SIX (6) MONTHS from the mailing date of this communication.
> - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
> - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
> - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
>   Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
>   earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>27 December 2004</u>.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-47* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-47* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All   b) ☐ Some * c) ☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
   application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-47 are presented for examination.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter, which the applicant regards as his invention.

3.   Claims 1-47 are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject

matter which applicant regards as the invention.

A. The following claim language is indefinite:

i. As per claims 1, 10, 15, 24, 33 and 42 (lines 11-12), it is uncertain

clearly understood " popping a task identifier from one of the top end and

the bottom end of that task queue..." (i.e. or instead of and).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

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5.   Claims 1-4, 8, 15-18, 22, 24-27, 31, 33-36, 40 and 42 are rejected under

35 U.S.C. 103(a) as being unpatentable over Cornaby (U.S. Patent 5,410,722)

in view of Tallman (U.S. 4,482,956).

6.   As to claims 1, 15, 24, 33, and 42, Cornaby teaches the invention

substantially as claimed including: A computer system configured to:

(A) Provide at least one task queue having a top end and a bottom end

and in which can be stored and from which can retrieved task identifier, which

identify tasks to be performed (abstract; col. 2, lines 5-7; col. 4, lines 2-4 and

lines 32-34; col. 7, lines 38-41 and lines 56-58); and

(B) For each provided task-queue, employ a separate execution thread

associated therewith to (col. 2, lines 47-49; col. 4, lines 2-4; col.8, lines 11-12):

i) select repeatedly a current access mode from one of a LIFO

access mode and a FIFO access mode (col. 4, line 61- col. 5, line 5);

ii) Perform dynamically identified tasks by repeatedly (Abstract; col.

7, lines 38-41; col. 4, lines 2-4):

(a) Popping a task identifier one of the top end and the

bottom end of that task queue in order to access that task queue in a LIFO

access mode or a FIFO access mode in accordance with the current

access mode thus selected (col. 4, lines 14-15; col. 4, line 60 - col.5, line6;

col.5, lines 13-15; col.8, lines 7-8, lines 11-13 and lines 27-28).

(b) So performing the task thereby identified as, in at least

some instances, to find one or more further tasks to be performed

(col. 2, lines 25-30; col.5, lines 21-28); and

(c) Pushing onto the task queue task identifiers that identify

any tasks thus found (col.5, lines 36-40; col.8, lines 15-16 and line 28).

7.   Cornaby does not explicitly teach the mode-selection criterion. However,

Tallman teaches that a mode-selection criterion (col. 5, line 54 – col. 6, line 6).

8.   It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine the teaching of Cornaby and Tallman because

Tallman's mode-selection criterion would increase the flexibility of Cornaby's

system by providing a mode-selection criterion to allowi plural programs on

different processors in the multiprocessors to make insertions and deletions in a

queue to be improved the operating efficiency of a multiprocessor.

9.   As to claims 2, 16, 25 and 34, Cornaby teaches pushing occurs at the

bottom end of each provided task queue, popping in accordance with the FIFO

access mode occurs at the top end of each provided queue (col. 4, lines 64-67),

and popping in accordance with the LIFO access mode occurs at the bottom end

of each provided task queue (col. 4, line 67 – col. 5, line 3).

10.   As to claims 3, 17, 26 and 35, Cornaby teaches queue accesses in each provided task queue are circular (col. 2, lines 24-27).

11.   As to claims 4, 18, 27 and 36, Cornaby teaches computer system is configured to provide a plurality of the task queues (col. 2, lines 5-7).

12.   As to claims 8, 22, 31 and 40 Cornably teaches an execution thread associated with a task queue that is empty (col. 2, lines 31 –32; col. 3, line 67; col. 5, lines 9-12).

13.   Claims 5-7, 9-14, 19-21, 23, 28-30, 32, 37-39, 41 and 43-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cornaby (U.S. Patent 5,410,722) in view of Tallman, as applied to claims 1, 15, 24, and 33 above, and further in view of Applicant Admitted Prior Art (AAPA).

14.   As to claim 10, Cornaby teaches the invention substantially as claimed including: define operation in which memory for data an object is allocated dynamically (abstract; col. 7, lines 38-40) includes:

(A) Provide at least one task queue having a top end and a bottom end and in which can be stored and from which can retrieved task identifier, which identify tasks to be performed (abstract; col. 2, lines 5-7; col. 4, lines 2-4 and lines 32-34; col. 7, lines 38-41 and lines 56-58); and

(B) For each provided task-queue, employ a separate execution thread associated therewith to (col. 2, lines 47-49; col. 4, lines 2-4; col.8, lines 11-12):

i) select repeatedly a current access mode from one of a LIFO access mode and a FIFO access mode (col. 4, line 61- col. 5, line 5);

ii) Perform dynamically identified tasks by repeatedly (Abstract; col. 7, lines 38-41; col. 4, lines 2-4):

(a) Popping a task identifier one of the top end and the bottom end of that task queue in order to access that task queue in a LIFO access mode or a FIFO access mode in accordance with the current access mode thus selected (col. 4, lines 14-15; col. 4, line 60 - col.5, line6; col.5, lines 13-15; col.8, lines 7-8, lines 11-13 and lines 27-28).

(b) So performing the task thereby identified as, in at least some instances, to find one or more further tasks to be performed (col. 2, lines 25-30; col.5, lines 21-28); and

(c) Pushing onto the task queue task identifiers that identify any tasks thus found (col.5, lines 36-40; col.8, lines 15-16 and line 28).

15.   Cornaby does not explicitly teach the mode-selection criterion. However, Tallman teaches that a mode-selection criterion (col. 5, line 54 – col. 6, line 6).

16.   It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Cornaby and Tallman because

Tallman's mode-selection criterion would increase the flexibility of Cornaby's system by providing a mode-selection criterion to allow plural programs on different processors in the multiprocessors to make insertions and deletions in a queue to be improved the operating efficiency of a multiprocessor.

17.   Cornaby and Tallman do not explicitly teach the garbage collection. However, AAPA teaches garbage collection. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Cornaby, Tallman and AAPA because AAPA's garbage collection would improve the flexibility of Cornaby and Tallman by having garbage collection to provide the automatic reclamation of dynamically allocated memory.

18.   As to claims 5, 9, 19, 23, 28, 32, 37, 41, AAPA teaches dynamically identified task is a garbage-collection task for performing for a given object associated with that task (page 1, lines 17-21);

Cornaby teaches processing that includes identifying in the given object references to other objects and thereby identifying the tasks of performing similar processing for those other objects (col. 2, lines 24-30; col. 3, lines 54-56; col. 5, lines 21-28).

19.   As to claims 6, 13, 20, 29 and 38, Cornably teaches the task identifiers are

identifiers of the objects associated with tasks that the task identifiers identify

(col.4, lines 3-4; col. 7, line 39).

20.   As to claims 7, 14, 21, 30 and 39, Conably teaches the task identifiers are

pointer to the objects associated with the tasks that the task identifier identify

(col. 2, lines 26-31; col.3, lines 34-36).

21.   As to claim 11, Cornaby teaches teach garbage-collection cycle includes

an operation that provides a plurality of the task queues (col. 2, lines 5-7).

22.   As to claim 12, Cornably teaches an execution thread associated with a

task queue that is empty (col. 2, lines 31 –32; col. 3, line 67; col. 5, lines 9-12):

       (A)   pops a task identifier from a task queue other than the one with it is

associated (col. 4, lines 14-15; col. 4, line 60 - col.5, line6; col.5, lines 13-15;

col.8, lines 7-8, lines 11-13 and lines 27-28);

       (B)   so performs the task thereby identified as, in at least some

instances, to find one or more further task to be performed (col. 2, lines

25-30; col.5, lines 21-28); and

       (C)   pushed onto the task queue associated with it task identifiers that

identify any tasks thus found (col.5, lines 36-40; col.8, lines 15-16 and line

28).

23.   As to claims 43-47, Tallman teaches the mode-selection criterion is based on the number of entries in the task queue (col. 5, line 54 – col. 6, line 6).

Response to the argument

24.   Applicant's arguments filed 12/27/2004 for claims 1-47 have been considered but are moot in view of the new ground(s) rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

25.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Camquy Truong whose telephone number is (703) 305 - 8888. The examiner can normally be reached on 8AM – 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 703-305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR of Public PAIP. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIP system, contact the Electronic Business Center (EBC) at 866-217-9197(toll-free).

Camquy Truong

April 7, 2005

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